CLAIMS

1. (currently amended) In a receiver of a multiple-input multiple-output (MIMO) system, the receiver having a plurality of receiver antennas, a method comprising:

(a) receiving signals from a plurality of transmitter antennas, each transmitter antenna transmitting multiple channels;

(b) for each of a plurality of channels originating from the transmit antennas, estimating a CIR value characterizing channel impulse response (CIR) of the channel;

(c) summing the CIR values for the plurality of channels to generate a plurality of summed CIR values;

(d) integrating the summed CIR values over a specified window to generate an integrated summed CIR value;

(e) determining symbol timing in the received signals based on the integrated summed CIR value; and

(f) processing the received signals based on the determined symbol timing, wherein:

a plurality of integrated summed CIR values are generated corresponding to a plurality of different instances of the specified window, each instance corresponding to integrating a different set of summed CIR values for the plurality of channels; and

the determined symbol timing is based on selecting a maximum integrated summed CIR value of the plurality of integrated summed CIR values.

2. (previously presented) The method of claim 1, wherein the MIMO system is a MIMO orthogonal frequency division multiplexing (OFDM) system.

3. (previously presented) The method of claim 1, wherein each CIR value corresponds to power of the CIR.

4. (previously presented) The method of claim 3, wherein each CIR value is based on a correlation between a corresponding received signal and a known training sequence.

5. (previously presented) The method of claim 1, wherein the specified window has a duration substantially equal to the length of a guard interval of symbols in the received signals.

6. (previously presented) The method of claim 1, wherein the specified window has a duration substantially equal to a maximum tolerable delay spread for the received signals.

7. (canceled)

8. (previously presented) The method of claim 1, wherein the processing of the received signals includes generating a discrete Fourier transform (DFT) for each received signal, wherein timing of the DFT is based on the determined symbol timing.

9. (previously presented) The method of claim 1, wherein the plurality of channels corresponds to a single antenna of the receiver.

10. (previously presented) The method of claim 1, wherein a different symbol timing is determined for each different receiver antenna.

11. (previously presented) The method of claim 10, wherein:

timing of the processing of the received signals for each different receiver antenna is based on the maximum symbol timing for all of the receiver antennas; and

at least one received signal is delayed based on a timing difference between the maximum symbol timing and the symbol timing determined for said at least one received signal.

12. (previously presented) The method of claim 1, wherein the plurality of channels corresponds to all of the antennas of the receiver.

13. (previously presented) The method of claim 12, wherein a single, joint symbol timing is determined for all of the receiver antennas by:

(b) estimating the CIR value for each of the plurality of channels corresponding to all of the antennas of the receiver;

(c) summing the CIR values for the plurality of channels corresponding to all of the antennas of the receiver to generate the plurality of summed CIR values;

(d) integrating the summed CIR values over a specified window to generate the integrated summed CIR value; and

(e) determining the single, joint symbol timing in the received signals based on the integrated summed CIR value.

14. (previously presented) The method of claim 1, wherein the determined symbol timing corresponds to minimal CIR power falling outside of the specified window and maximal CIR power falling inside the specified window.

15. (currently amended) A receiver for a multiple-input multiple-output (MIMO) system, the receiver comprising:

a plurality of receiver antennas, each adapted to receive signals from a plurality of transmitter antennas in the MIMO system, each transmitter antenna transmitting multiple channels;

a receiver branch for each different receiver antenna, each receiver branch having a transform adapted to transform a corresponding received signal into a plurality of transformed components;

a symbol decoder adapted to receive transformed components from each transform and to detect symbols, wherein:

processing within each receiver branch is based on symbol timing determined for each receiver branch; [[and]]

at least one receiver branch is adapted to determine its symbol timing by

(a) for each of a plurality of channels originating from the transmit antennas, estimating a CIR value characterizing channel impulse response (CIR) of the channel;

(b) summing the CIR values for the plurality of channels to generate a plurality of summed CIR values;

(c) integrating the summed CIR values over a specified window to generate an integrated summed CIR value; and

(d) determining the symbol timing in the received signals based on the integrated summed CIR value;

a plurality of integrated summed CIR values are generated corresponding to a plurality of different instances of the specified window, each instance corresponding to integrating a different set of summed CIR values for the plurality of channels; and

the determined symbol timing is based on selecting a maximum integrated summed CIR value of the plurality of integrated summed CIR values.

16. (previously presented) The receiver of claim 15, wherein each CIR value corresponds to power of the CIR, wherein each CIR value is based on a correlation between a corresponding received signal and a known training sequence.

17. (previously presented) The receiver of claim 15, wherein the specified window has a duration substantially equal to the length of a guard interval of symbols in the received signals.

18. (previously presented) The receiver of claim 15, wherein the specified window has a duration substantially equal to a maximum tolerable delay spread for the received signals.

19. (canceled)

20. (previously presented) The receiver of claim 15, wherein each transform is a discrete Fourier transform (DFT), wherein timing of the DFT is based on the determined symbol timing.

21. (previously presented) The receiver of claim 15, wherein the plurality of channels used by the at least one receiver branch corresponds to a single antenna of the receiver.

22. (previously presented) The receiver of claim 21, wherein a different symbol timing is determined for each different receiver antenna.

23. (previously presented) The receiver of claim 22, wherein:

timing of the processing of the received signals for each different receiver antenna is based on the maximum symbol timing for all of the receiver antennas; and

at least one received signal is delayed based on a timing difference between the maximum symbol timing and the symbol timing determined for said at least one received signal.

24. (previously presented) The receiver of claim 15, wherein a single, joint symbol timing is determined for all of the antennas of the receiver by the at least one receiver branch by:

estimating the CIR value for each of the plurality of channels corresponding to all of the antennas of the receiver;

summing the CIR values for the plurality of channels corresponding to all of the antennas of the receiver to generate the plurality of summed CIR values;

integrating the summed CIR values over a specified window to generate the integrated summed CIR value; and

determining the single, joint symbol timing in the received signals based on the integrated summed CIR value.

25. (previously presented) The receiver of claim 15, wherein the determined symbol timing corresponds to minimal CIR power falling outside of the specified window and maximal CIR power falling inside the specified window.

26. (canceled)

27. (previously presented) In a receiver of a multiple-input multiple-output (MIMO) system, the receiver having a plurality of receiver antennas, a method comprising:

(a) receiving signals from a plurality of transmitter antennas;

(b) for each of a plurality of channels originating from the transmit antennas, estimating a CIR value characterizing channel impulse response (CIR) of the channel;

(c) summing the CIR values for the plurality of channels;

(d) integrating the summed CIR values over a specified window;

(e) determining symbol timing in the received signals based on the integrated summed CIR value; and

(f) processing the received signals based on the determined symbol timing, wherein:

the plurality of channels corresponds to a single antenna of the receiver;

a different symbol timing is determined for each different receiver antenna;

timing of the processing of the received signals for each different receiver antenna is based on the maximum symbol timing for all of the receiver antennas; and

at least one received signal is delayed based on a timing difference between the maximum symbol timing and the symbol timing determined for said at least one received signal.

28. (previously presented) In a receiver of a multiple-input multiple-output (MIMO) system, the receiver having a plurality of receiver antennas, a method comprising:

(a) receiving signals from a plurality of transmitter antennas;

(b) for each of a plurality of channels originating from the transmit antennas, estimating a CIR value characterizing channel impulse response (CIR) of the channel;

(c) summing the CIR values for the plurality of channels;

(d) integrating the summed CIR values over a specified window;

(e) determining symbol timing in the received signals based on the integrated summed CIR value, wherein the determined symbol timing corresponds to minimal CIR power falling outside of the specified window and maximal CIR power falling inside the specified window; and

(f) processing the received signals based on the determined symbol timing.